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ABSTRACT

This paper summarizes the findings of a 2003 report, on effective strategies for educating and training U.S. teachers. The full report details the findings and policy implications, offering summaries of all 92 research studies reviewed, discussing the use of research in policy decisions, and making recommendations for improving teacher preparation research specifically and education research in general. The report examined: (1) the extent to which subject knowledge contributes to teacher effectiveness; (2) the extent to which pedagogical coursework contributes to teacher effectiveness; (3) the extent to which high quality field experience prior to certification contributes to teacher effectiveness; (4) alternative route programs that graduate high percentages of effective new teachers with average or above average rates of teacher retention; (5) teacher preparation strategies that are likely to increase new teacher effectiveness in hard-to-staff and low-performing schools; (6) whether setting more stringent teacher preparation program entrance requirements, or conducting more selective screening program candidates, can ensure that prospective teachers will be more effective; (7) whether accreditation of teacher preparation programs contributes significantly to the likelihood that graduates will be effective and remain in the classroom; and (8) whether institutional warranties for new teachers contribute to the likelihood that recent graduates will be effective. (SM)

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Education Commission of the States

Eight Questions on Teacher Preparation: What Does the Research Say?

A Summary of the Findings

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What are the most effective strategies for educating and training the nation's teachers?

For policymakers, teacher educators and others seeking clear answers to this question, the cacophony of claims and counterclaims by advocates of one approach or another – selectively using only those research studies consistent with their point of view – has made clarity elusive.

It was precisely the goal of the larger report from which this summary derives to review, thoroughly and dispassionately, the entire body of solid research on teacher preparation to ascertain what evidence the research truly provides and what its implications are for policy. The report is based on a review of 92 studies that were selected, using rigorous criteria, from a total of more than 500 originally considered. These studies were used to answer eight questions about teacher preparation that are of particular importance to policy and education leaders.

What follows is a summary of the findings of the report, published by the Education Commission of the States (ECS) in spring 2003. The full report, available both online **www.ecs.org/tpreport** and in print, includes a detailed description of the findings and policy implications, as well as summaries of all 92 research studies reviewed. It also features a discussion of the use of research in policy decisions and makes a number of recommendations for improving teacher preparation research specifically and education research, in general.

This report is the first in a series of reports on teaching quality that ECS will release over the next two years. Subsequent reports will focus on what the research says about teacher recruitment and retention, licensure and certification, and professional development.

The report examined the following questions:

Question 1:

To what extent does subject knowledge contribute to the effectiveness of a teacher?

RELATED QUESTIONS:

Is there a significant advantage to having an undergraduate major, as opposed to a minor, in the subject taught? To having a graduate degree, as opposed to an undergraduate major, in the subject?

There's a strong consensus these days that adequate subject knowledge is necessary for teachers to be successful. Just what "adequate knowledge" means is not clear, however. Is a subject major necessary, or is a minor adequate? And how much of an advantage is having a graduate degree in the subject being taught?

Although the research on this topic is spotty and focuses largely on the teaching of mathematics, it provides **moderate support** for the importance of solid subject-matter knowledge. The research generally is not fine-grained enough, however, to make it clear how much subject-matter knowledge is important for teaching specific courses and grade levels.

As to the advantage of having an undergraduate major in the subject taught, the research implies that some critical number of courses is helpful, but it is **inconclusive** about the necessity of a subject major. In fact, the research suggests there may be a point after which additional courses are of minimal value. It would seem important to know the specific subjects a teacher is teaching – calculus, for example, as opposed to beginning algebra – to assess the adequacy of his or her content background. Ultimately, the question is not how many courses are important, or even whether a major is important, but which courses have an appreciable impact on a teacher's ability to teach specific subjects. And that level of specificity is simply lacking in the research.

With regard to the advantage of having a graduate degree in the subject taught, the research is far too slim either to support or deny it and is therefore **inconclusive**.

There is, however, **limited support** for the conclusion that, in addition to a strong grasp of the subject itself, knowledge of how to teach a particular subject is important.

POLICY IMPLICATIONS

Given the variability of requirements for subject minor, and uncertainty about the competence of even those teachers with subject majors, the most surefire way of determining competence would be to require teachers to demonstrate knowledge of a subject through an examination or portfolio.

The next-best alternative would seem to be to require a subject major, particularly for secondary school teachers. As for elementary school teachers, who teach multiple subjects, policy alternatives to some demonstration of subject-matter competence are less apparent.

Educators and policymakers also must find ways to ensure that prospective teachers acquire not only adequate knowledge of a subject, but also some knowledge of how to teach it. The research seems to suggest that preparation in a given subject does not necessarily develop understanding of how particular concepts and procedures related to that subject are best learned.

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Question 2:

To what extent does pedagogical coursework contribute to a teacher's effectiveness?

One of the most heated debates concerning teacher preparation is the extent to which pedagogical skills and knowledge are necessary in addition to a solid grasp of subject matter.

The research provides **limited support** for the conclusion that preparation in pedagogy can contribute significantly to effective teaching, particularly subject-specific courses (focused, for example, on how to teach mathematics or science) and those designed to develop core skills, such as classroom management, student assessment and curriculum development.

Less clear is how such knowledge and skills are best acquired – through coursework, field experience (especially student teaching) or on the job. Also unclear is the impact, if any, of other kinds of pedagogical coursework, such as classes in child development or learning theory. Nor does the research provide much insight as to whether certain kinds of coursework might be particularly helpful for teaching racially or ethnically diverse students or students in low-performing schools.

POLICY IMPLICATIONS

It is difficult to draw clear implications from the research other than for policymakers to support beginning teachers' acquisition of whatever critical knowledge and skills they can gain prior to teaching full time. The uncertainty about the ability of preservice preparation to ensure the solid acquisition of core pedagogical skills opens the door to the consideration of alternative preparation routes, which emphasize on-the-job training, as an option. In addition, the placement of newly minted teachers in challenging situations that require the exercise of well-developed pedagogical skills and knowledge should be avoided.

Question 3:

To what extent does high-quality field experience prior to certification contribute to a teacher's effectiveness?

RELATED QUESTIONS:

Are professional development schools more effective than other kinds of field experience? Are five-year preparation programs more effective than four-year programs? What are the general characteristics of high-quality field experience?

While there is a broad consensus that practical experience is important in learning to teach, there's a good deal of disagreement over the best way for prospective teachers to acquire such experience.

There are a number of research studies directed at the questions posed above, but nearly all are descriptive studies that cannot provide solid evidence of the effectiveness of various strategies. Thus while the research is often suggestive, it ultimately has to be considered **inconclusive.**

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The various descriptive studies reviewed for this report do suggest that solid field experience can have an influence on prospective teachers, but the influence is most often expressed in terms of changes in beliefs and attitudes that have no proven correlation with teaching effectiveness. This also holds for the questions about five-year programs and professional development schools.

High-quality field experiences also appear to share several characteristics but, once again, there is no research demonstrating that the presence of these characteristics results in greater teacher effectiveness. Among the most common characteristics identified are (1) strong supervision by well-trained teachers and university faculty, and (2) prospective teachers' solid grasp of subject matter and basic understanding of pedagogy prior to student teaching.

POLICY IMPLICATIONS

It is difficult to draw clear implications for policy. The absence of solid research may indicate the need to significantly strengthen field experience and ensure its solid integration with preservice coursework. Thus, a prudent course of action would be to ensure that, whatever model of field experience is incorporated into a teacher preparation program, it reflects the characteristics that the research identifies as important – even though those characteristics have not proven their importance in solid empirical research. On the other hand, the absence of evidence in support of preservice field experience invites consideration of other options, including alternative route programs in which preservice field experience is minimal.

Question 4:

Are there "alternative route" programs that graduate high percentages of effective new teachers with average or higher-than-average rates of teacher retention?

RELATED QUESTION:

What are the important characteristics of successful alternative route programs?

No issue related to teacher preparation has generated more debate than the issue of the effectiveness of alternative route preparation programs. Proponents insist alternative routes play a critically important role in expanding the pool of teachers, and in particular provide a pathway for unusually capable candidates who otherwise would be lost to the profession. Critics argue alternative route programs shortchange both teacher candidates and the students they teach because their preparation, particularly in pedagogy, is inadequate.

Although the research on this topic isn't substantial, there is enough to justify several modest conclusions and provide some guidance for policymakers. Overall, the research provides **limited support** for the conclusion that there are indeed alternative programs that produce cohorts of teachers who are ultimately as effective as traditionally trained teachers. On the other hand, because of their limited preservice training, alternative route participants may experience more difficulties than traditionally prepared graduates at the beginning of their teaching assignment.

The research also offers **limited support** for the conclusion that short-term retention rates for alternatively prepared teachers can be comparable to those for traditionally trained teachers. But such comparisons should take into account the possibility that retention rates for both groups may vary depending on the quality of the particular teacher preparation program.

As for long-term retention rates, there is inadequate data, largely because alternative route programs are a relatively recent phenomenon. There are indications, however, that alternatively prepared teachers may not have as strong a long-term commitment to the profession as traditionally prepared teachers. But overall, the research on this issue has to be regarded as **inconclusive.**

Alternative routes typically enlist a substantially greater percentage of minority teacher candidates than do traditional programs. This means such programs make an important contribution to the diversity of the teacher workforce and may be particularly attractive to districts seeking to increase the number of teachers of color.

The studies reviewed for this report suggest that the following features are important to successful alternative route programs. It should be noted, however, that the research is **inconclusive** as to whether these characteristics, in fact, do contribute to better teaching among alternative route graduates:

- Strong partnership between preparation programs and school districts
- Good participant screening and selection process
- Strong supervision and mentoring for participants during their teaching
- Solid curriculum that includes coursework in classroom basics and teaching methods
- As much training and coursework as possible prior to the assignment of participants to full-time teaching.

POLICY IMPLICATIONS

The research provides some support for the development of alternative route preparation programs, especially if they are designed to serve a particular school district need. Alternative programs must be adequately staffed and funded, however, to enable them to include all the elements important to their success. Moreover, policymakers must recognize that the limited preservice component of alternative route programs may hamper the effectiveness of participants early in their teaching assignment.

Question 5:

Are there any teacher preparation strategies that are likely to increase the effectiveness of new teachers in hard-to-staff and low-performing schools?

RELATED QUESTION:
What about in urban or remote rural schools?

Perhaps the greatest challenge facing public education is how to raise the achievement of the lowest-performing students, many of whom are enrolled in high-poverty and hard-to-staff schools.

The very few studies that met the criteria for this report provide **limited support** for the conclusion that deliberate efforts to prepare teachers to teach in urban, low-performing schools can be beneficial. Field placement in an urban school, training in multicultural awareness, and effective recruitment and screening of teacher candidates are the only three strategies with any real support in the research – and of these three, field placement is the most commonly mentioned.

There is no research that addresses the needs of teachers in rural schools.

POLICY IMPLICATIONS

The research reviewed for this question is too thin to ground any confident policy recommendations. But policymakers and educators should give some consideration to developing programs that embody the features identified in Question 4 as important to program success, whether alternative or traditional. High-quality field placements in low-performing schools may be particularly helpful.

Question 6:

Is setting more-stringent teacher preparation program entrance requirements, or conducting more-selective screening of program candidates, likely to ensure that prospective teachers will be more effective?

The teacher crisis in the United States is not only one of supply and distribution. Many policymakers and educators have expressed doubts about the quality of some newly licensed teachers and have suggested raising the bar for admission to teacher preparation programs. Even if such a measure were to improve the quality of new teachers, however, there are concerns that it could wind up exacerbating the already critical shortage of teachers.

Only three studies reviewed for this report touched on this question, and none of them directly. Thus, the research would have to be considered **inconclusive.** Two studies did find a correlation between the strength of teachers' academic success and direct or indirect measures of teaching success. A third study, however, suggests that raising academic requirements for admission to teacher preparation programs would reduce the pool of teacher candidates, particularly minorities.

There was no research examined for this report that addressed the impact of more-selective screening of candidates for teacher preparation programs.

POLICY IMPLICATIONS

Given the inconclusiveness of the research evidence and the potentially negative impacts of raising admission standards, no confident policy recommendations can be offered.

Question 7:

Does the accreditation of teacher preparation programs contribute significantly to the likelihood their graduates will be effective and will remain in the classroom?

RELATED QUESTION:

What accreditation measures are likely to be most effective?

Every state but Arizona requires at least its public teacher education programs or institutions to undergo some sort of accreditation process. In spite of the ubiquity of the requirement, however, there are many policymakers and experts who question whether it truly increases the quality of teacher preparation programs and the effectiveness and professional longevity of the teachers they graduate.

Given the limited number of studies on this issue (three), the research is inconclusive. What little research there is seems to suggest that accreditation of a teacher education program by the National Council for the Accreditation of Teacher Education (NCATE) may increase the number of program graduates who become fully certified to teach. Whether teacher certification is an adequate predictor of effective teaching, however, is subject to serious question (and will be discussed in detail in a future report in this series). It also should be noted that all the research reviewed for this report was based on an NCATE accreditation process that predated the adoption of NCATE's new accreditation standards in 2000.

There is no research evidence available on which to base a comparison of the impact of NCATE accreditation and the impact of accreditation by the Teacher Education Accreditation Council or other, state-developed accreditation processes.

POLICY IMPLICATIONS

No implications for policy can be drawn from the available research.

Question 8:

Do institutional warranties for new teachers contribute to the likelihood that recent graduates of those institutions will be effective?

RELATED QUESTION:

Do teachers given remediation under those warranties demonstrate increased classroom effectiveness?

The creation of institutional warranties for teacher education graduates in Georgia and Kentucky and at individual institutions in some 20 other states has aroused both curiosity and skepticism. Such warranties imply that teacher preparation institutions are responsible not just for ensuring their students do well on licensure examinations, but also for guaranteeing their effectiveness in the classroom – a whole new level of institutional accountability.

Unfortunately, warranties offered by teacher preparation institutions have not been the subject of any appreciable research. Thus, it is difficult to ascertain (a) whether such warranties have an impact on program quality and increase the likelihood that newly graduated teachers will be effective, or (b) whether teachers given remediation under such warranties improve their performance.

POLICY IMPLICATIONS

In the absence of research, no implications for policy can be drawn.

Conclusion

While the research on teacher preparation is limited, it does provide some guidance for policymakers and others on a number of issues, including the value and impact of certain kinds of coursework, field experience and alternative approaches to teacher preparation.

The relative thinness of the research should be kept in mind in weighing the claims of proponents of various positions in the debate over teacher preparation. The lack of research does not necessarily mean the proponents are wrong; but the available evidence simply does not justify the strength with which some advocates insist on the absolute and exclusive correctness of their point of view.

Clearly, the issue of teacher preparation calls for more, and better, research. A number of recommendations are in order, but among the most important are the following:

- Make education research more responsive to the needs of policymakers and practitioners, and more accessible to all stakeholders
- Strengthen research capacity by increasing overall investment and defining a strategic and coordinated research agenda
- Ensure the research on teacher preparation defines more precisely the questions that need to be addressed and the data that need to be gathered
- Make the connections to student achievement as explicit as possible
- Create a culture in which all education stakeholders use solid research, and use it fairly, in making policy decisions.

Education researchers, policymakers, practitioners and funders all can play an important role in making the research on teacher preparation and education research, in general, more robust and significant. The goal should be nothing less than to make research as indispensable a feature of the decisionmaking process in education as it is in medicine and other evidence-based fields.

About This Document

The report on which this summary is based, Eight Questions on Teacher Preparation: What Does the Research Say?, *was written by ECS Program Director Michael Allen. It is available on the ECS Web site at www.ecs.org/tpreport. You may order a print copy from ECS for $20 (plus postage and handling) by calling 303.299.3692.*

Also available soon, both online and in print, will be a companion document, A Policymaker's Primer on Education Research: How to Understand, Evaluate and Use It. *A joint effort of ECS and Mid-Continent Research for Education and Learning and available from both organizations, the* Primer *is an indispensable resource for anyone who wants to gain a deeper understanding of education research and use it more effectively in making policy and practice decisions.*

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